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REMARKS

Claims 1-9 and 11-16 are pending, with claims 1 and 11 being in independent form. By the present amendment, claims 4 and 5 have been amended and claims 12-16 have been added without adding new matter.

The drawings have been objected to for various informalities. Applicants are submitting with this paper a Request for Approval of Drawing Changes, entry of which would address the Examiner's concerns. The proposed addition of Fig. 4 is believed to address the Examiner's objections regarding the subject matter of claim 9. The Specification has been correspondingly amended to describe new Fig. 4.

Applicants disagree with the Examiner's position regarding the rejections of claims 4 and 5 for indefiniteness. The language of these claims, prior to this amendment, is believed to be reasonably clear to those of ordinary skill in this art, which is all that is required by the statute.

Nevertheless, claims 4 and 5 have been amended to make explicitly clear that which was already at least implicitly clear from the claims. These amendments were made for reasons unrelated to the statutory requirements for a patent and have not narrowed the scope of the claims. Accordingly, the amendment of these claims does not trigger the application of the doctrine of prosecution history estoppel to limit the range of equivalents.

Claims 1, 5, 8, and 11 stand rejected for obviousness over U.S. Patent No. 5,240,867 to Suzuki et al. ("Suzuki") in view of U.S. Patent No. 5,583,367 to Blossfeld. Further, claims 2, 3, 6, 7, and 9 stand rejected for obviousness over Suzuki and Blossfeld in view of U.S. Patent No. 6,063,678 to D'Anna.

Applicant describes a semiconductor device arranged at a surface of a semiconductor substrate having an initial doping having an electrical connection comprising at least one plug made of a material with a high conductivity, such as metal, between said initially doped substrate and said surface of the substrate. The device has at least one ground connection arranged to be connected to a ground pin on a package. The ground connection is arranged to be connected to the ground pin using the electrical connection, where the initially doped substrate is arranged to be

connected to the ground pin via a reverse side of the substrate, opposite the surface, and thereby being arranged to establish a connection between the ground connection and the ground pin.

Suzuki discloses, e.g., in figure 5, a collector (77) is connected to a pin (104) on a package using an electrical connection comprising the connection (79), the plug (73), the substrate (61), the reverse side of the substrate (62), and the stage (100). The voltage applied to the stage is V_{cc} and not ground. As admitted on page 4 of the Action, Suzuki does not disclose a ground plug and a ground connection in accordance with the claimed invention. This is not surprising, since an object of Suzuki is to supply a power source voltage to die circuit elements from the reverse side of the substrate.

Blossfeld discloses a device having the lowest potential in the device connected to the reverse side of the substrate, e.g., $-V_{ss}$. This is not a ground connection per se, but instead a common method of isolating the PN-junction above. The arrangement in Blossfeld, which is commonly called "junction isolation," is implemented in almost all silicon devices to provide isolation. One practicing the junction isolation configuration in Blossfeld, however, would not be able to maintain such isolation while at the same time providing a ground to components on the opposite surface of the device, in accordance with the claimed invention.

Accordingly, Blossfeld merely provides an example of junction isolation, which is commonly known in the art, while at the same time teaching away from a device according to the claimed invention comprising at least one plug as a ground connection arranged to be connected to a ground pin on a package via a reverse side of the substrate.

In accordance with the MPEP, three criteria must be met to establish a prima facie case of obviousness. First, the cited documents must teach or suggest all of the claim limitations. Second, there must be some suggestion or motivation, either in the cited documents themselves or in the knowledge generally available to one of ordinary skill in the art, to have combined the teachings of the cited documents. Third, there must have been a reasonable expectation that the documents could have been successfully combined.

The rejections cannot stand at least because no combination of the cited documents teaches all of the claim limitations. Moreover, the cited documents would not have supplied any motivation to combine them as suggested by the Action. Finally, there would have been no reasonable expectation that such complex documents could have been successfully combined to yield a working system, which even then would have had to be further modified to obtain the claimed subject matter.

As discussed above, the combination of Suzuki and Blossfeld (and D'Anna) fails to teach or suggest a device according to the claimed invention comprising at least one plug as a ground connection arranged to be connected to a ground pin on a package via a reverse side of the substrate.

Accordingly, since the combination of Suzuki and Blossfeld (and D'Anna) fails to disclose or suggest all of the claim limitations for at least the above reasons, the obviousness rejections should be withdrawn.

The second requirement of a prima facie case of obviousness is also missing here. One of ordinary skill in the art would have had no motivation to combine Suzuki and Blossfeld at least because the problems that Suzuki and Blossfeld aim to solve are different. Blossfeld is concerned with junction isolation, which teaches away from providing power through the substrate as in Suzuki, and thus it is hard to understand why one knowing Suzuki would have been motivated to look to Blossfeld for anything. Moreover, the Action's suggestion that the documents can be combined ignores the great technical differences between Suzuki and Blossfeld that would have made such a combination improbable to say the least.

It is respectfully submitted that the suggestion to combine such disparate documents, with no indication of any motivation for the combination of the documents themselves, may reflect a use of Applicant's claims as mere templates for picking isolated features from the art. Such hindsight reconstruction is improper. E.g., *Sensonics, Inc. v. Aerosonic Corp.*, 38 U.S.P.Q.2d 1551 (Fed. Cir. 1996); *In re Oetiker*, 24 U.S.P.Q.2d 1443, 1446 (Fed. Cir. 1992) (reversing an obviousness rejection and stating the "reason, suggestion, or motivation" to combine (or modify) prior art "can not come from the applicant's invention itself. [Citation omitted.]").

Since there would have been no motivation to combine Suzuki and Blossfeld as suggested in the Action, the second requirement of a prima facie case of obviousness is missing, and the obviousness rejections should be withdrawn for this reason also.

The third requirement of a prima facie case is also missing. Even if one had attempted to combine the disclosures of the cited documents, one would have been more likely to arrive at something that did not work at all or not in the manner claimed by the present application. As discussed above, one of ordinary skill in the art would have known that the features of Suzuki and Blossfeld cannot be combined without further modification to reach the subject matter defined by the claims. In the absence of any suggestion in the cited documents of how to make such a combination operable, one would have faced a serious engineering problem that naturally would have had a low probability of success without substantial experimentation and effort, especially in view of the need to modify the teachings of the documents. It is well settled that "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make that modification obvious unless the prior art suggested the desirability of the modification." *In re Fritch*, 23 U.S.P.Q.2d 1780, 1783-84 (Fed. Cir. 1992).

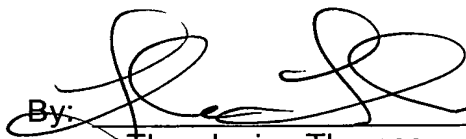
Accordingly, the combination of documents relied upon to support the obviousness rejection is improper and the claim rejection should therefore be reconsidered and withdrawn.

For the foregoing reasons, Applicants consider the application to be in condition for allowance and respectfully request notice thereof at an early date. The

Examiner is encouraged to telephone the undersigned at the below-listed number if, in the Examiner's opinion, such a call would aid in the examination of this application.

Respectfully submitted,

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10/17/02
(Date of Signature)

Attachment to Amendment dated October 17, 2002

Marked-Up Copy of Specification

The paragraph beginning at page 8, line 23:

Figures 1 and 2a-2e only described a NPN bipolar transistor. It will be understood by one of ordinary skill in the art that [but naturally can] other types of semiconductor devices, such as PNP bipolar transistors, MOS transistors or discrete components, may be implemented having a ground connection being connected to the reverse side of the substrate as shown in Fig. 1. For example, a MOS transistor according to the invention is illustrated in Fig. 4 having the ground plug connected to the source terminal. The semiconductor device may of course be part of a semiconductor circuit, which may consist of a plurality of different semiconductor devices. A major advantage is that a more compact layout of the semiconductor circuit may be obtained, with a reduced number of contact pads.

Marked-Up Copy of Claims

4. (Amended) Semiconductor device according to claim 1, wherein said plug extends deeper into the initially doped substrate beyond any [than therein introduced and/or existing] PN-junctions.

5. (Amended) Semiconductor device according to claim 1, wherein the upper end of each plug is connected to said ground connection via an electrically conductive material [, especially a material with a high conductivity, especially a metal material].